

**The Effect of Secondary Market Existence on Primary Market Liquidity:
A Natural Experiment in Peer-to-Peer Lending***

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Abstract

We use the unexpected closure of Prosper.com's secondary market to study how secondary market liquidity affects primary market liquidity, as well as the spillover effect on the primary market liquidity of a prime competitor. Uniquely, our comprehensive intraday issuance data for the primary market allows us to precisely measure the liquidity of the primary market. We find that the closure of Prosper's secondary market reduces primary market liquidity in all three standard dimensions: time, cost, and quantity. Specifically, Prosper's primary market liquidity is reduced because it takes longer to fund loans both by individuals and by institutions, requires a higher origination fee to fund loans by individuals, and decreases the percentage of loans funded by both individuals and institutions. Further, we find that the closure of Prosper's secondary market leads to a positive primary market liquidity spillover for Lending Club by reducing its time to fund by individuals.

Keywords: Liquidity Premium, Secondary Market, Primary Market, P2P

JEL: G12, G23

1. Introduction

Peer-To-Peer (P2P) lending platforms facilitate the funding of unsecured consumer loans by matching borrowers and lenders. Prosper and Lending Club (LC) are the two largest and best-known P2P lending platforms in the US and they resemble each other closely in borrower, lender, and loan characteristics. Originally, both platforms offered a secondary market in which primary market lenders had the option to sell their shares of loans before the loan maturity date for a fixed fee. Both secondary markets were reasonably active. On September 29, 2016, Prosper unexpectedly announced that it would soon shut down its secondary market, because the trading volume was not sufficient to cover monthly payments to a third party that operated the secondary market trading platform. Prosper then proceeded to shut down its secondary market on October 28, 2016. By contrast, LC's secondary market remains open as today.

This natural experiment provides a unique opportunity to examine how the existence of a secondary market affects primary market liquidity, as well as the spillover effect on the primary market liquidity of a prime competitor. Unlike the infrequent issuance of debt or equity by a given firm, the issuance of new P2P loans in a given maturity and credit risk category happens many times per day. Uniquely, our comprehensive intraday issuance data allows us to precisely measure *primary market liquidity* on all three standard dimensions of liquidity: time, cost, and quantity (Holden, Jacobsen and Subrahmanyam, 2014). The prior literature has examined the impact of secondary market liquidity on primary market pricing and issuance/access. By contrast, we examine how our extreme secondary market liquidity event (closure) impacts primary market liquidity on all three dimensions, plus spillover effects.

Starting with the time dimension, we find that closure of Prosper's secondary market increases the time for *individuals* to fund a loan in the primary market from 59.8 hours pre-event to 87.5

hours in week 1 post-event, 92.4 hours in week 2, and 105.6 hours in week 3. This increase in funding time is statistically significant and economically large in the full sample and in four out of six maturity/credit rating categories. Similarly, we find that closure of Proper's secondary market increases the time for *institutions* to fund a loan in the primary market from 1.9 hours pre-event to 6.3 hours in week 1 post-event, 13.0 hours in week 2, and 4.2 hours in week 3. This increase in funding time is statistically significant and economically large in the full sample and in all six maturity/credit rating categories. By contrast, we find that closure of Proper's secondary market spills over to Lending Club by decreasing the time for *individuals* to fund a loan in the primary market from 56.1 hours pre-event to 25.1 hours in week 1 post-event, 38.7 hours in week 2, and 34.0 hours in week 3. This decrease in funding time is statistically significant and economically large in the full sample and in five out of six maturity/credit rating categories.¹

Turning to the cost dimension, we find that closure of Proper's secondary market increases the origination fee charged to loans funded by *individuals* in the primary market from 312 basis points pre-event to 322 basis points in week 1 post-event, 334 basis points in week 2, and 317 basis points in week 3. This increase in origination fee is statistically significant, though more modest in economic size, in the full sample and in two out of six maturity/credit rating categories. We find that closure of Proper's secondary market has a mixed and generally small impact on the origination fee charged to loans funded by *institutions* in the primary market.²

Finally on the quantity dimension, we find that closure of Proper's secondary market increases the percentage of loans that *expire* without being funded by *individuals* from 0.0% pre-event to 0.4% hours in week 1 post-event, 0.3% in week 2, and 0.0% hours in week 3. We find that the percentage of loans that *expire* without being funded by *institutions* increases from 0.0% pre-event

¹ We do not have any data on Lending Club loans funded by *institutions*.

² We do not have any data on Lending Club origination fees.

to 0.1% hours in week 1 post-event, 0.2% in week 2, and 0.2% hours in week 3. Said differently, an increase in the percentage of loans that expire means a decrease in the percentage of loans that are funded.³

In summary, we find that the closure of Prosper's secondary market reduces primary market liquidity in all three dimensions: time, cost, and quantity. Specifically, Prosper's primary market liquidity is reduced because it takes longer to fund loans both by individuals and by institutions, requires a higher origination fee to fund loans by individuals, and decreases the percentage of loans funded by both individuals and institutions. Further, we find that the closure of Prosper's secondary market leads to a positive primary market liquidity spillover for Lending Club by reducing its time to fund by individuals.

Studies in the equity, bond, and syndicated loan markets find that lower secondary market liquidity leads to lower primary market prices. In the equity market, Ellul and Pagano (2009) find that stocks with lower expected secondary market liquidity are offered at a discount of 80-120 basis points in IPOs by using data from London stock exchanges. Butler, Grullon and Weston (2005) find that firms with greater secondary market liquidity are associated with significantly lower investment bank fees for seasoned equity offerings. In the corporate bond market, Chen, Lesmond and Wei (2005) find that bonds that have greater secondary market liquidity have lower yields. In the syndicated loan market, Gupta, Singh and Zebedee (2008) find that loans with low anticipated secondary market liquidity have higher interest rates are 80-120 bps. Kamstra, Roberts and Shao (2014) find that secondary market for loans lead to price concessions on debt in the syndicated loan market. By contrast, we examine the impact on primary market liquidity, not pricing.

³ We do not have any data on Lending Club expired loans.

Several studies examine how secondary market liquidity affects primary market issuance. For example, Hanselaar, Stulz and van Dijk (2017) find that increases in secondary market liquidity positively lead to increases in equity issuance (both IPOs and SEOs). Drucker and Puri (2009) find that loans sold in the secondary contain additional covenants and more restrictive net worth covenants when agency and information problems are more severe, because this increases borrower access to the primary market. By contrast, we examine how secondary market liquidity affects primary market liquidity on all three dimensions: time, cost, and quantity.

The rest of the paper is organized as follows. Section 2 presents the institutional background of the P2P lending market. Section 3 presents the timeline of the key events. Section 4 presents the empirical analysis of our predictions; and Section 5 concludes.

2. Peer-to-Peer Lending and Prosper.com VS LendingClub.com

Peer-to-peer lending platforms facilitate the funding of consumer loans by matching borrowers with potential investors. P2P lending is one of the fastest growing segments in FinTech-based markets. Morgan Stanley Research estimated that the global P2P market will reach \$290 billion in loan origination volume by 2020.⁴ In the US, P2P platforms allow the funding of unsecured personal loans to borrowers in most states with credit scores above minimum requirements. The platforms assign interest rates based on their own credit grading systems that account for borrowers' risk of default (mainly based on borrowers' credit profiles and the loan term) and their repayment history on P2P platforms.⁵ Once a loan listing receives sufficient funds from investors,

⁴ For more details see: <https://www.morganstanley.com/ideas/p2p-marketplace-lending>.

⁵ The minimum credit score Prosper requires for new borrowers is 640 (FICO score). Lending Club allows borrowers with a minimum credit score of 600. Depending on the credit grading, Prosper assigns interest rates (APR) between 5.99–36% and charges 1.4–5% origination fees (deducted before transferring the fund to investors). Similarly, APRs on Lending Club are between 6.95–35.89% with a 1–6% origination fee. Lender yield will thus be based on the APR minus the origination fee.

it becomes a loan. Lending Club (LC) and Prosper are the two largest and best-known peer-to-peer lending platforms in the US. Most loans have a maturity of 36 or 60 months.

Before October 27, 2016, in addition to the primary markets in which investors lend to borrowers, both platforms also separately offered secondary markets for their own investors. Through the third-party trading platform FOLIOfn (later renamed Folio Investing), both Prosper and LC investors had the option to liquidate their holdings by selling “notes”—shares of loans that they invested in—on the trading platform. That way, they did not have to hold on to those notes until the loans matured. It should be noted that LC’s and Prosper’s trading platforms were separate, so that Prosper.com investors could not sell notes to Lending Club investors and vice versa. In addition to benefiting from liquidity, P2P investors could potentially make profits by selling a note at a price above the outstanding principal plus any accrued interest. The trading platform collected a fee of 1% of the purchase price from the sellers but did not charge buyers any fees.

On September 29, 2016, Prosper unexpectedly announced that it would soon shut down its secondary market. In an email that was sent to all of its investors, Prosper noted, “We are writing to let you know that as of October 27, 2016, Prosper will no longer offer the Folio Investing Note Trading platform, the secondary market for Prosper Notes. Prosper has found over time that very few investors are using the secondary market and, as such, has made the decision to no longer offer this service.”⁶ Prosper also noted in the same email that “The secondary market trading service will be available as normal until end of day (5:30 pm PST) October 19, 2016. After that time, any new orders to list Notes for sale will not have sufficient time to be completed and processed before the site becomes unavailable to users at the end of day (5:30 pm PST) on October 27, 2016.” Following the announcement, Prosper shut down its thinly traded platform on October 27, 2016.

⁶ The full text of the email can be found at: <https://www.lendacademy.com/prosper-closing-secondary-market-retail-investors/>.

Lending Club, in contrast, is still offering its note trading platform via Folio Investing. This event provides an ideal opportunity to study the impact of secondary market liquidity on the primary market. In the next section, we outline our key hypotheses and our empirical strategy for testing them.

3. Timeline of Key Events

Figure 1 describes the timeline of the events for our empirical setting. On September 29th, 2016, Prosper announced it would close the secondary market operated by Folio. At the time, Prosper stated its intention to search for an alternative secondary market. On October 14th, 2016, Lending Club changed its pricing policy. As disclosed in the Form 8-K, Lending Club substantially increased interest rates for low grade loans (Grades F and G). In the letter to investors, Lending Club explained that it made changes to interest rates to adapt to competitive, macroeconomic and credit trends. On October 20th, 2016, new notes could not be listed on the Prosper secondary market. On October 25th, 2016, Prosper changed its pricing policy in the primary market. Specifically, Prosper lowered interest rates for high grade loans (grades AA-C) and increased interest rates for lower grade loans (D-HR). Prosper explained that “the changes are a direct result of the forward looking credit market, interest rate expectations, the US credit environment and the competitive environment in US consumer unsecured lending.”⁷ Prosper secondary market ceased to exist on October 28th, 2016, and investors were forced to hold their loans to maturity.

A “pre-event” window including any of the above five events can be contaminated. A priori, we cannot identify which event is the most important. Therefore, we define the pre-event window as the week before the first announcement: 09/22/2016 to 09/28/2016. We use three post-event

⁷ For more details see: <https://blog.prosper.com/2016/10/25/prosper-announces-pricing-change/>.

windows to allow for learning: 10/28/2016 to 11/3/2016 is Post Week 1; 11/4/2016 to 11/10/2016 is Post Week 2; and 11/11/2016 to 11/17/2016 is Post Week 3.

[Insert Figure 1 about here.]

4. Empirical Analysis

4.1. Data, Samples, and Summary Statistics

We gathered data from two complementary sources. The first one is the loan-level data provided by Prosper.com and LendingClub.com, extracted from their respective websites. This data source provides information about loans and their performance. Examples are the dollar amount, loan term in months, the status of the borrower's homeownership, his or her full-time employment status, and the state where the borrower lives in at the time of loan applications. In addition, we observe the lettered credit grade for the loan—one of the seven grades: AA, A, B, C, D, E, and HR. We also observe the set of credit variables Experian uses to assign the credit score.⁸

In addition, Prosper.com provides information on the start and end time for each loan's funding process, which allow us to measure the loan's funding duration. However, such information was not available for LendingClub.com. We fortuitously collected real-time data from LendingClub.com around the time when Prosper.com closed its secondary market. Specifically, once every ten minutes, we used automated agents to collect (individual) loan listings that were available to investors, as well as their funding status (i.e., dollar amount raised, and number of bids received). We use this second dataset (which we call "high-frequency" data) to back out the bid-level information about the loan funding process.

Table 1 reports the summary statistics of the key variables used in our analysis by each week in our sample period and by each subsample. We mainly examine three outcome variables that

⁸ Prosper reports a 20-point range for the borrower's credit score to protect the borrower from identity theft.

measures the primary market liquidity: funding time (*Funding Time*), funding cost (*Origination Fee*), and funding quantity (*Percentage of Unfunded Loans*). *Funding Time* is the duration between the loan's start and end funding time, measured in hours. *Origination Fee* is a measure for the loan's origination fee, quoted in basis points. Unfunded loans include expired loans and withdrawn loans. *Expired Loans* are those loans that are not fully funded by investors in seven days. *Withdrawn Loans* are those loans withdrawn by borrowers during the funding process.

For Prosper's loans, *Top Grade* equals one if the loan belongs to grade AA or A and zero otherwise; *Middle Grade* equals one if the loan belongs to grade B or C and zero otherwise; *Bottom Grade* equals one if the loan belongs to grade D, E or HR and zero otherwise. For Lending Club's loans, *Top Grade* equals one if the loan belongs to grade A or B and zero otherwise. *Middle Grade* equals one if the loan belongs to grade C, D or E and zero otherwise. *Bottom Grade* equals one if the loan belongs to grade F or G and zero otherwise. For both platforms, there are loan terms: 3 years and 5 years.

Panel A summarizes these measures for loans available to Prosper's individual lenders. This sample includes 1,952 loans in total. There are more 3-year loans than 5-year loans (1,424 vs. 528). Funding time increases substantially for all but the 3-year top-grade loans. *Origination fee* increases for the full sample as well as several subsamples. In terms of funding quantity, a higher percentage of loans expired (unfunded) and a higher percentage of borrowers withdraw their loan listing. We additionally report *Loan Yield*, which was determined by the platform and quoted in basis points. As we documented in Section 3, while *Loan Yield* decreases for top and middle grade loans, it increases for bottom grade loans.

Panel B summarizes these measures for loans available to Lending Club's individual lenders. This sample includes 8,335 loans in total. For individual lender, the number of Lending Club loans

is more than four times of that of Prosper for individual lenders. Similar to Prosper, there are more 3-year loans than 5-year loans (7,542 vs. 793). In contrast to Prosper, funding time decreases substantially for all but the 3-year top-grade loans. Information on the origination fee and expired/withdrawn loans is not available for Lending Club. Loan yield increases for all but the 5-year top-grade loans, and the increase is the largest for the 5-year bottom-grade loans.

Panel C summarizes these liquidity measures for loans available to Prosper’s institutional lenders. Our sample includes 12,295 loans in total. Similar to Panels A and B, there are more 3-year loans than 5-year loans (8,953 vs. 3,342). Funding time increases for loans in all subsample categories, to a less extent for loans available for Prosper’s individual lenders. The change in origination fee is mixed. A higher percentage of loans expires unfunded and a higher percentage of borrowers withdraw their loan requests. Loan yield decreases for the top- and middle-grade loans and increases for the bottom-grade loans.

[Insert Table 1 about here.]

4.2. Empirical Methods

In this section, we conduct univariate and multivariate analyses for two liquidity measures for the primary market: funding time (*Funding Time*) and funding cost (*Origination Fee*). To examine the differential impact of the closure of Prosper’s secondary market on loans of different characteristics, we divide loans in our sample into six categories by term and credit grade. Following the methodology of Boehmer, Saar, and Yu (2005), we report changes of the dependent variable from the pre-event period to each of the three post-event periods.

Our main multivariate regression model can be written:

$$Y_i = \beta_0 + \beta_1 Term \times Grade \times Post Week + \tau X_i + \delta_i + \varepsilon_i \quad (1)$$

where Y_i is the dependent variable. The subscript i refers to a loan in our sample. *Term* is a set of two dummy variables indicating 3-year and 5-year loan terms. *Grade* is a set of three dummy variables representing top-, middle-, and bottom-grade loans. *Post Week* is a set of three dummy variables representing each of the three post-event weeks. X_i is a vector of control variables including loan characteristics, borrower characteristics, and market-related controls. Loan characteristics include the following variables: *Listing Amount* is the dollar amount of a loan, quoted in \$1,000. *Borrower Rate* is the interest rate of the loan. *Listing Term* is the term of the loan. Borrower characteristics include *Income Range*, which is a category variable ranging from 2 to 6, while a greater value represents a higher income range. Market-related controls include the following variables: *Stock Market Return* is measured using the average of daily market returns over the five trading days prior to a loan's start funding date. *Stock Market Volatility* is measured using the standard deviation of daily market returns over the five trading days prior to a loan's start funding date. *Credit Spread* is measured as the spread between the 5-year High Quality Market (HQM) corporate bond yield and the 5-year treasury yield for the top- and middle-grade loans, and it is measured as the spread between the 5-year high-yield CCC or below bond yield and the 5-year treasury yield for the bottom-grade loans. For the regression with *Funding Time* as the dependent variable, we also include *Funding Time Volatility*, which is measured as the standard deviation of funding time for all loans listed in the week prior to a loan's start funding date. δ_i represents borrower state fixed effects.

In subsequent sections, we discuss the results of univariate and multivariate analyses for each of the three liquidity measures.

4.3. Empirical Results

4.3.1. Funding Time

Funding time is our first measure of the primary market liquidity. Panel A of Table 2 reports the results of the univariate analysis of funding time for loans funded by Prosper individual lenders. The increases in the mean and median funding time from the pre-event week to the post-event weeks are statistically significant for all but the top-grade loans. For the full sample, the mean increase in funding time is 27.7, 32.7, and 45.8 hours, respectively, for Post Week 1, Post Week 2, and Post Week 3. This is substantial given the average funding time of 59.8 hours in the pre-event week. The increase in the median funding time is 56, 61.8, and 71.7 hours, respectively, for Post Week 1, Post Week 2, and Post Week 3. These changes are more substantial given the pre-event median value of 14.7 hours. Interestingly, funding time for the 3-year top-grade loans decreases in Post Week 1. This indicates that immediately after the closure event, individual lenders are concerned about the liquidity of lower quality loans and hence they switch to investing in higher quality loans with a shorter term. The corresponding multivariate analysis in the first two columns of Table 3 corroborates the univariate results.

Panel B reports the results of the univariate analysis of funding time for loans funded by Lending Club individual lenders. In contrast to the loans funded by Prosper individual lenders, the mean and median funding time decrease from pre-event week to post-event weeks for all but the top-grade loans. Given the average funding time of 56.1 hours for loans in the pre-event week at Lending Club, the average reduction of 31, 17.3, and 22 hours in funding time in Post Week 1, Post Week 2, and Post Week 3 is economically meaningful. The middle two columns of Table 3 show the multivariate analysis results, corroborating the univariate analysis results. This indicates that Lending Club, as the main competitor of Prosper, gets the liquidity spillover after Prosper shut down its secondary market – individual lenders are likely moving from Prosper to Lending Club.

Panel C reports the results of the univariate analysis of funding time for loans funded by Prosper institutional lenders. The results are similar to those on loans funded by Prosper individual lenders – funding time goes up in all subsample categories, including the top-grade loans. The difference is that the increase in funding time for loans funded by Prosper institutional lenders is smaller than that of Prosper individual lenders (by 4.4, 11.7, and 2.3 hours). However, the average funding time for institutional loans in the pre-event week is only 1.9 hours. Such increases in funding time are larger in percentage terms. The last two columns of Table 3 show the multivariate analysis results, corroborating the univariate analysis results. This implies that both individual and institutional lenders feel the impact of secondary market closure on the primary market.

Overall, we find robust and consistent results that (1) Prosper individual lenders’ funding time increases substantially in a large majority of cases, (2) Lending Club individual lender’s funding time decreases in a large majority of cases, and (3) Prosper institutional lender’s funding time increases across the board.

[Insert Table 2 about here.]

[Insert Table 3 about here.]

4.3.2. Funding Cost—Origination Fee

Funding cost is our second liquidity measure for the primary market. We use loan’s origination fee as the proxy for the funding cost. Prosper loan’s origination fee is an upfront cost taken off the top of a loan.⁹ Since Lending Club loan’s origination fee is not available in the dataset, we only analyze Prosper loan’s origination fees. Below is the intuition of using loan’s origination fee as the measure of funding cost:

The Bid-Ask spread in a generic securities market maps to our setting as follows:

⁹ For more details see: <https://www.bankrate.com/loans/personal-loans/reviews/prosper/>.

- Ask price = implied loan price that the lender buys at = implied loan price that Prosper sells at based on the lender's yield
- Bid price = implied loan price that the borrower sells at = implied loan price that Prosper buys at based on the borrower's yield

Using the standard discounted cash flow model, put the loan payments in the numerator and the lender's yield in the denominator and the present value is the implied ask price; put the borrower's yield in the denominator and the present value is the implied bid price.¹⁰

- Lender's yield = borrower's yield – origination fee
- Prosper's profit margin = Ask – Bid = Bid-Ask Spread = maps back to the origination fee = cost of issuance

The univariate results of the origination fee are reported in Table 4, Panel A for Prosper individual lenders. The origination fee increases for bottom-grade loans and decreases for the top- and middle-grade loans. Overall, the origination fee increases significantly for three out of six tests for the whole sample. The results similar for Prosper institutional lenders, as reported in Table 4, Panel B. However, there are no increases in the origination fee for the whole sample.

[Insert Table 4 about here.]

Table 5 presents the multivariate results of Prosper loan's origination fee. The second and fourth columns include controls and borrower state fixed effects, the first and third columns do not. There are five significantly positive coefficients for Prosper individual lenders (column 2), and six significantly positive coefficients for Prosper institutional lenders (column 4). The origination fee actually decreases for the 3-year top-grade loans. Overall, these results provide

¹⁰ Although both Prosper and Lending Club don't literally buy and sell the loan – that is, they don't act as dealers – instead they act as brokers bringing the borrower and lender together – nonetheless, it is useful to think of the transaction this way.

consistent evidence that Prosper loan's origination fee (i.e., funding cost) increases in general after the closure of its secondary market.

[Insert Table 5 about here.]

4.3.3. Funding Quantity

Funding quantity is our third liquidity measure for the primary market. For funding quantity, we use the percentage of unfunded loans to analyze the impact of secondary market existence on the primary market liquidity. We do not conduct any statistical test since there are zero expired loans in the pre-event week. Thus, the standard error is zero. In addition, there are zero withdrawn loans for some subsamples in the pre-event week.

Table 1 presents the results for percentage of unfunded loans. Expired loans are those not successfully funded by lenders in seven days. Withdrawn loans are those withdrawn by borrowers during the funding process. There could be cases in which borrowers withdraw a loan request, repackage it, and submit the same request. None of the withdrawn loans in our sample re-list at Prosper.com. The increases in the percentage of expired loans, and the increases in the percentage of withdrawn loans for most categories directly support the funding time results. After the closure of Prosper's secondary market, it takes longer to fund loans, more loans fail to get funded, and more borrowers give up on the loan listing and withdraw – all of which indicate a decline in the primary market liquidity. This is analogous to a case in which limit orders take longer on average to execute and a larger proportion of the limit orders fails to execute at all.

4.4. Robustness

4.4.1. Default risk of Prosper.com

To test the robustness of the above empirical findings, we first rule out the alternative hypothesis of the default risk of Prosper.com. Specifically, one may argue that the changes in the

primary market is not due to investors' perceived reduction in liquidity, but rather, the secondary market closure reflects an increased probability of Prosper.com going bankrupt, and that affects investors' behaviors in the primary market. Our empirical findings do not support this conjecture.

The first evidence is the lack of announcement effect on Lending Club, which is publicly traded. If the reduction in the primary market liquidity is due to the default risk of Prosper.com, we should find a positive announcement effect on Lending Club. However, we do not find such evidence. We use Fama-French three factor model as the baseline.¹¹ The daily abnormal returns are generated by the "Event Study" tool from WRDS.¹² We use 100 trading days as the estimation window and 50 days as the gap between estimation window and event window. Event window is a 7-day window with 3 days before and 3 days after the event date. Overall, we do not find a positive average abnormal return for Lending Club around the announcement of Prosper's secondary market closure.

The second evidence is from Google search trends.¹³ We do not find any surge in Google search on "Prosper.com" and "Lending Club" around the time when Prosper.com shut down the secondary market. For robustness, we also searched under "Prosper", "Prosper & Finance" and "Prosper & Default" and find similar results.

Finally, investors should not be concerned about Prosper's default.¹⁴ "Unlike Lending Club, Prosper has set up a separate entity for the issuance and servicing of loans, known as Prosper Funding LLC versus the lending platform itself, which is owned by Prosper Marketplace, Inc. The

¹¹ Our results are very similar if we use the market model.

¹² For more details see: https://dss.princeton.edu/online_help/stats_packages/stata/eventstudy.html.

¹³ Google trends is a search trends feature that shows how frequently a given search term is entered into Google's search engine relative to the site's total search volume over a given period of time. For more details see: <https://trends.google.com/trends/>.

¹⁴ For more details see: <https://p2plendingexpert.com/if-prosper-goes-bankrupt-are-you-protected-yes/>.

platform going bankrupt would mean a bankruptcy filing by Prosper Marketplace (PMI) and Prosper Funding would be unaffected as a separate entity.”

4.4.2. Overall trend of increasing in funding time for Prosper.com

A second alternative explanation to our findings is that there could be an overall trend of increase in the funding time of Prosper.com loans, independent of its secondary market closure. To test whether this is a valid concern, we employ a placebo test to repeat the analysis of the effect of Prosper’s shut down of secondary market on loan’s funding time on 1,000 unique days before Oct 28th, 2016 using a 4-week window. The average change in funding time around the 1000 unique days is 0.054 hours and is not statistically different from zero. This placebo test ensures that Prosper.com does not have an overall increasing trend of funding time for loans, which further supports our findings.

4.4.3. Overall negative shock to P2P lending industry

Another alternative explanation for our findings is that there is an overall negative shock to the P2P lending industry in general. To ensure that the deterioration of Prosper’s primary market condition is not driven by changes in macroeconomic conditions or negative shocks to the consumer lending industry, we examine funding time of loans funded by Lending Club individual lenders. Lending Club resembles Prosper in many dimensions, and we find that the funding time is comparable for Prosper and Lending Club loans prior to the closure of Prosper’s secondary market. After the closure, funding time increases substantially for Prosper loans and decreases significantly for Lending Club loans.

4.4.4. Reduced credit quality after the closure event

The last alternative explanation for our findings is that the increased funding cost is due to reduced credit quality after the closure event. We use *Prosper Score* as the dependent variable to

conduct both univariate and multivariate analysis. Prosper score is determined by the platform, it measures the credit quality of a borrower. Overall, the insignificant and small absolute value of the coefficient suggests that borrower credit quality (*Prosper Score*) within each subsample categories is comparable before and after the closure event.

5. Concluding Remarks

In this paper, we have analyzed how the existence of the secondary market affects the primary market liquidity. In an online P2P lending market, even a thinly-traded secondary market provides exit options and liquidity to the primary market. The closure of this secondary market is followed by a substantial reduction in the primary market liquidity: (1) Prosper funding time increases for both individual and institutional lenders; (2) Lending Club funding time decreases for individual lenders, to which we have data access; (3) Prosper origination fees increase; (4) More Prosper loans expire unfunded, for both individual and institutional lenders; (5) More Prosper borrowers withdraw their loan listings. All of these findings suggest that the reduction of the secondary market liquidity (a closure in this case) decreases the primary market liquidity for Prosper, while its competitor, Lending Club, benefits from the liquidity spillover.

Our research contributes to the literature in two important aspects. First, high frequency of issuance is rare in nearly all primary markets. For example, firms do not issue equity or debt more often than once or twice per year. Therefore, it is extremely challenging to measure the liquidity of a primary market. By contrast, P2P platforms in our sample have a small number of standard credit grade and maturity categories and issue hundreds of loans each day, distributed across these categories. The high-frequency (intraday) data enable us to precisely measure the primary market liquidity. This situates us in a unique position to determine the impact of the secondary market liquidity on the primary market liquidity. Second, our event is an extreme one – a complete closure

of the secondary market. This extreme shock makes it much cleaner to determine the impact of the secondary market on the primary market.

Figure 1. Timeline of the Key Events

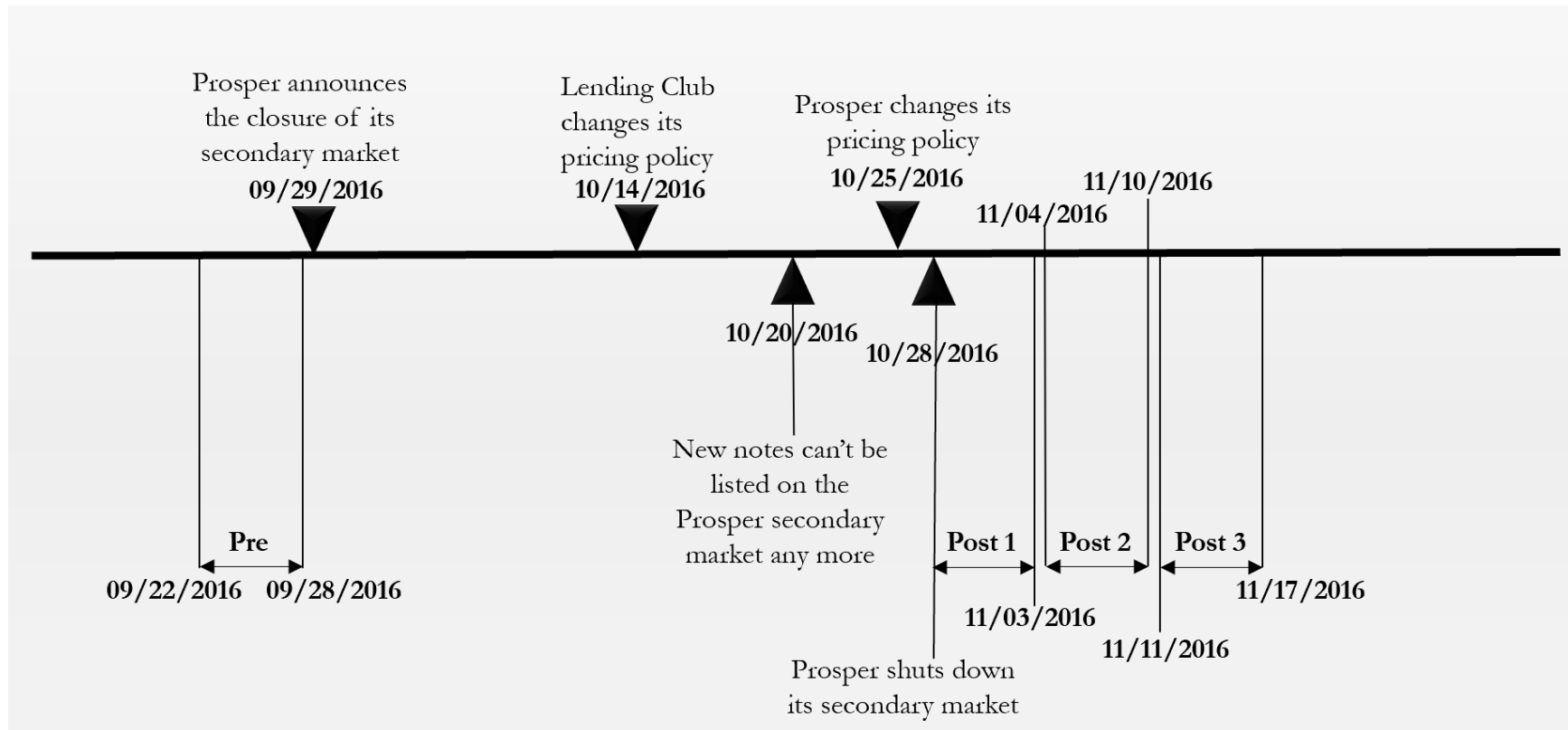


Table 1. Sample Descriptive Statistics

This table presents the summary statistics of the four key variables in our analysis. Pre Week takes a value of one for the pre-event window from 09/22/2016 – 09/28/2016. Post Week 1 takes a value of one for the post-event window from 10/28/2016 – 11/03/2016. Post Week 2 takes a value of one for the post-event window from 11/04/2016 – 11/10/2016. Post Week 3 takes a value of one for the post-event window from 11/11/2016 – 11/17/2016. *Funding Time* is the duration between the loan’s start and end funding time, measured in hours. *Origination Fee* is a measure for the loan’s origination fee, quoted in basis points. Unfunded loans include expired loans and withdrawn loans. *Expired Loans* are those loans that are not fully funded by investors in seven days. *Withdrawn Loans* are those loans withdrawn by borrowers during the funding process. We additionally report *Loan Yield*, which was determined by the platform and quoted in basis points. For Prosper’s loans, *Top Grade* equals one if the loan belongs to grade AA or A and zero otherwise; *Middle Grade* equals one if the loan belongs to grade B or C and zero otherwise; *Bottom Grade* equals one if the loan belongs to grade D, E or HR and zero otherwise. For Lending Club’s loans, *Top Grade* equals one if the loan belongs to grade A or B and zero otherwise. *Middle Grade* equals one if the loan belongs to grade C, D or E and zero otherwise. *Bottom Grade* equals one if the loan belongs to grade F or G and zero otherwise. *3-Year* means the loan is a 3-year loan and *5-Year* means the loan is a 5-year loan.

(Table 1 continued)

	Primary Market Liquidity						Loan Yield		N	
	Funding Time		Origination Fee		% of Unfunded Loans					
	Mean	Median	Mean	Median	Expired	Withdrawn	Mean	Median		
Panel A: Prosper Individual Lenders										
Full Sample										
Pre Week	59.752	14.687	312.464	355.499	0.000%	2.122%	1739.703	1659	377	
Post Week 1	87.491	70.717	321.983	356.399	0.422%	1.688%	1734.446	1515	711	
Post Week 2	92.404	76.523	333.501	359	0.260%	3.385%	1888.422	1815	384	
Post Week 3	105.555	86.398	317.494	354.799	0.000%	1.458%	1744.792	1593	480	
3-Year Top Grade										
Pre Week	159.538	146.095	282.797	351.150	0.000%	3.333%	810.222	766	90	
Post Week 1	120.428	101.757	279.887	350.350	0.000%	1.111%	745.577	719.999	180	
Post Week 2	148.232	167.370	298.955	351	0.000%	2.632%	765.907	750	76	
Post Week 3	177.626	170.041	280.657	350.900	0.000%	2.479%	751.983	750	121	
3-Year Middle Grade										
Pre Week	24.513	6.996	365.781	364	0.000%	2.500%	1437.338	1365	80	
Post Week 1	70.711	60.174	364.449	363.099	1.130%	0.565%	1376.842	1319	177	
Post Week 2	88.986	100.192	363.552	362	1.149%	4.598%	1336.713	1265	87	
Post Week 3	75.517	80.305	364.570	362.999	0.000%	0.000%	1383.080	1315	100	
3-Year Bottom Grade										
Pre Week	6.862	0.284	395.918	395.999	0.000%	1.205%	2727	2720	83	
Post Week 1	44.256	18.675	399.084	403.700	0.000%	2.222%	2853.400	3049	180	
Post Week 2	40.214	3.186	399.529	405.299	0.000%	2.344%	2870.875	3116.500	128	
Post Week 3	40.254	6.493	400.266	405.999	0.000%	1.639%	2898.295	3124	122	
5-Year Top Grade										
Pre Week	164.917	158.324	194.053	223	0.000%	7.692%	893.615	966	13	
Post Week 1	140.336	162.319	172.935	129.200	0.000%	11.765%	815.117	751	17	
Post Week 2	182.790	187.008	187.971	220	0.000%	0.000%	801.785	820	14	
Post Week 3	192.851	170.108	201.515	220	0.000%	0.000%	828.473	820	19	
5-Year Middle Grade										
Pre Week	31.357	15.281	237.818	240	0.000%	0.000%	1607.729	1722	48	
Post Week 1	115.575	103.473	236.211	236	1.370%	2.740%	1539.795	1545	73	
Post Week 2	124.235	138.888	233.540	230	0.000%	7.407%	1422.926	1265	27	
Post Week 3	73.086	45.551	234.449	233	0.000%	0.000%	1464.019	1425	53	
5-Year Bottom Grade										
Pre Week	31.563	11.818	258.501	257.500	0.000%	1.587%	2425.905	2399	63	
Post Week 1	109.810	92.656	262.197	260.150	0.000%	1.190%	2564.429	2499	84	
Post Week 2	104.130	66.307	262.269	260.050	0.000%	3.846%	2567.981	2499	52	
Post Week 3	141.130	95.137	259.906	260	0.000%	3.077%	2481.169	2499	65	

(Table 1 continued)

	Primary Market Liquidity		Loan Yield		N
	Funding Time				
	Mean	Median	Mean	Median	
Panel B: Lending Club Individual Lenders					
Full Sample					
Pre Week	56.074	24	1457.337	1399	2,337
Post Week 1	25.061	12.499	1345.283	1149	2,174
Post Week 2	38.732	16.166	1332.211	1149	1,771
Post Week 3	34.064	17.833	1371.866	1149	2,053
3-Year Top Grade					
Pre Week	23.375	4.166	890.036	899	655
Post Week 1	24.426	10.999	1013.886	1139	1,302
Post Week 2	47.110	16.331	972.285	1049	959
Post Week 3	42.382	24.749	999.333	1139	1,060
3-Year Middle Grade					
Pre Week	52.495	40.999	1617.240	1559	1,085
Post Week 1	27.576	16.499	1760.047	1799	788
Post Week 2	29.756	16.082	1691.297	1699	740
Post Week 3	25.408	16.499	1707.980	1699	902
3-Year Bottom Grade					
Pre Week	4.951	3.166	2673.762	2649	21
Post Week 1	1.842	0.999	2866	2869	17
Post Week 2	0.699	0.583	2869	2869	10
Post Week 3	0.667	1.001	2869	2869	3
5-Year Top Grade					
Pre Week	156.126	163.897	1013.846	1049	130
Post Week 1	16.498	16.498	799	799	1
Post Week 2	110.671	95.165	799	799	6
Post Week 3	141.499	149.831	802.125	799	8
5-Year Middle Grade					
Pre Week	108.839	80.313	1787.922	1699	334
Post Week 1	14.879	12.333	2444.500	2474	50
Post Week 2	15.485	16.332	2432.140	2474	43
Post Week 3	16.186	11.749	2369.089	2474	56
5-Year Bottom Grade					
Pre Week	17.549	4.166	2687.284	2674	102
Post Week 1	9.864	11.749	2869	2869	16
Post Week 2	4.563	0.166	2869	2869	13
Post Week 3	2.091	1.250	2869	2869	24

(Table 1 continued)

	Primary Market Liquidity						Loan Yield		N
	Funding Time		Origination Fee		% of Unfunded Loans				
	Mean	Median	Mean	Median	Expired	Withdrawn	Mean	Median	
Panel C: Prosper Institutional Lenders									
Full Sample									
Pre Week	1.934	0.160	317.551	356.300	0.000%	0.346%	1467.662	1319	2,600
Post Week 1	6.279	0.309	319.324	355.700	0.072%	0.325%	1488.846	1375	2,770
Post Week 2	13.679	0.290	319.468	356.300	0.249%	0.560%	1460.037	1315	1,607
Post Week 3	4.237	0.078	309.115	354	0.150%	0.207%	1460.421	1265	5,318
3-Year Top Grade									
Pre Week	1.940	0.175	301.396	352.999	0.000%	0.281%	833.061	851	711
Post Week 1	9.086	0.335	302.292	351.800	0.148%	0.592%	787.539	790	676
Post Week 2	13.013	0.302	303.331	351.899	0.824%	0.275%	782.063	790	364
Post Week 3	5.646	0.106	278.753	351	0.200%	0.333%	749.028	750	1,501
3-Year Middle Grade									
Pre Week	1.964	0.164	365.666	364	0.000%	0.435%	1432	1365	920
Post Week 1	2.748	0.293	365.383	364.300	0.000%	0.098%	1420.076	1375	1,019
Post Week 2	9.669	0.108	364.964	363.999	0.000%	0.157%	1401.426	1375	638
Post Week 3	2.374	0.075	364.765	362.999	0.065%	0.194%	1392.189	1315	1,548
3-Year Bottom Grade									
Pre Week	1.766	0.144	392.761	391.899	0.000%	0.714%	2600.079	2574	280
Post Week 1	6.744	0.288	392.527	390.100	0.304%	1.216%	2586.881	2499	329
Post Week 2	21.991	0.003	390.604	389.999	0.000%	0.585%	2505.439	2499	171
Post Week 3	4.535	0.050	395.444	395	0.251%	0.251%	2703.144	2699	796
5-Year Top Grade									
Pre Week	1.981	0.189	208.505	223.100	0.000%	0.000%	918.067	966	59
Post Week 1	15.187	0.492	203.298	220.800	0.000%	0.000%	835.769	860	78
Post Week 2	16.708	0.296	192.300	220	2.564%	5.128%	799.538	820	39
Post Week 3	2.826	0.100	205.768	220.999	0.000%	0.000%	842.371	860	299
5-Year Middle Grade									
Pre Week	1.519	0.151	236.595	237.450	0.000%	0.214%	1556.265	1595	468
Post Week 1	4.475	0.297	235.698	236.300	0.000%	0.000%	1516.777	1545	449
Post Week 2	14.662	0.296	235.254	235	0.000%	1.111%	1497.052	1480	270
Post Week 3	4.228	0.076	233.995	232.300	0.124%	0.124%	1440.622	1375	809
5-Year Bottom Grade									
Pre Week	3.202	0.175	258.798	257.500	0.000%	0.000%	2442.302	2399	162
Post Week 1	13.863	0.335	260.395	258	0.000%	0.000%	2499.374	2399	219
Post Week 2	21.650	0.001	258.519	258	0.000%	0.800%	2429.464	2399	125
Post Week 3	6.876	0.050	260.842	260	0.274%	0.000%	2515.299	2499	365

Table 2. Funding Time - Univariate Analysis

This table presents the results of univariate analysis on loan's funding time. *Pre Week* takes a value of one for the pre-event window from 09/22/2016 – 09/28/2016. *Post Week 1* takes a value of one for the post-event window from 10/28/2016 – 11/03/2016. *Post Week 2* takes a value of one for the post-event window from 11/04/2016 – 11/10/2016. *Post Week 3* takes a value of one for the post-event window from 11/11/2016 – 11/17/2016. *Funding Time* is the duration between the loan's start and end funding time, measured in hours. For Prosper's loans, *Top Grade* equals one if the loan belongs to grade AA or A and zero otherwise; *Middle Grade* equals one if the loan belongs to grade B or C and zero otherwise; *Bottom Grade* equals one if the loan belongs to grade D, E or HR and zero otherwise. For Lending Club's loans, *Top Grade* equals one if the loan belongs to grade A or B and zero otherwise. *Middle Grade* equals one if the loan belongs to grade C, D or E and zero otherwise. *Bottom Grade* equals one if the loan belongs to grade F or G and zero otherwise. *3-Year* means the loan is a 3-year loan and *5-Year* means the loan is a 5-year loan. Statistical significance at the 10%, 5% and 1% levels is denoted by *, ** and ***, respectively.

	Post Week 1 - Pre Week	p- value	Post Week 2 - Pre Week	p- value	Post Week 3 - Pre Week	p- value
Panel A: Prosper Individual Lenders						
Full Sample						
Difference in Mean	27.738***	0.000	32.651***	0.000	45.802***	0.000
Difference in Median	56.029***	0.000	61.836***	0.000	71.711***	0.000
3-Year Top Grade						
Difference in Mean	-39.109***	0.001	-11.305	0.406	18.087	0.156
Difference in Median	-44.338***	0.004	21.275	0.709	23.947*	0.068
3-Year Middle Grade						
Difference in Mean	46.197***	0.000	64.473***	0.000	51.004***	0.000
Difference in Median	53.177***	0.000	93.195***	0.000	73.309***	0.000
3-Year Bottom Grade						
Difference in Mean	37.394***	0.000	33.352***	0.000	33.392***	0.000
Difference in Median	18.392***	0.000	2.902***	0.000	6.210***	0.000
5-Year Top Grade						
Difference in Mean	24.580	0.332	17.873	0.540	27.933	0.354
Difference in Median	3.994	0.601	28.683	0.610	11.783	0.192
5-Year Middle Grade						
Difference in Mean	84.217***	0.000	92.877***	0.000	41.728***	0.000
Difference in Median	88.192***	0.000	123.607***	0.000	30.270***	0.000
5-Year Bottom Grade						
Difference in Mean	78.250***	0.000	72.567***	0.000	109.561***	0.000
Difference in Median	80.838***	0.000	54.488***	0.000	83.318***	0.000

(Table 2 continued)

	Post Week 1 - Pre Week	p- value	Post Week 2 - Pre Week	p- value	Post Week 3 - Pre Week	p- value
Panel B: Lending Club Individual Lenders						
Full Sample						
Difference in Mean	-31.012***	0.000	-17.341***	0.000	-22.009***	0.000
Difference in Median	-11.500***	0.000	-7.834***	0.000	-6.166***	0.000
3-Year Top Grade						
Difference in Mean	1.050	0.525	23.734***	0.000	19.006***	0.000
Difference in Median	6.833***	0.000	12.165***	0.000	20.582***	0.000
3-Year Middle Grade						
Difference in Mean	-24.918***	0.000	-22.739***	0.000	-27.086***	0.000
Difference in Median	-24.500***	0.000	-24.918***	0.000	-24.500***	0.000
3-Year Bottom Grade						
Difference in Mean	-3.108*	0.067	-4.251**	0.030	-4.283	0.225
Difference in Median	-2.166***	0.003	-2.583***	0.000	-2.165*	0.066
5-Year Top Grade						
Difference in Mean	-139.627	.	-45.454	0.204	-14.627	0.636
Difference in Median	-147.398	0.160	-68.732	0.218	-14.065	0.482
5-Year Middle Grade						
Difference in Mean	-93.959***	0.000	-93.353***	0.000	-92.652***	0.000
Difference in Median	-67.981***	0.000	-63.981***	0.000	-68.565***	0.000
5-Year Bottom Grade						
Difference in Mean	-7.685	0.188	-12.986**	0.045	-15.458***	0.001
Difference in Median	-7.583	0.445	-4.001***	0.006	-2.916***	0.000

(Table 2 continued)

	Post Week 1 - Pre Week	p- value	Post Week 2 - Pre Week	p- value	Post Week 3 - Pre Week	p- value
Panel C: Prosper Institutional Lenders						
Full Sample						
Difference in Mean	4.344***	0.000	11.745***	0.000	2.303***	0.000
Difference in Median	0.149	0.416	0.131***	0.000	-0.081***	0.000
3-Year Top Grade						
Difference in Mean	7.146***	0.000	11.072***	0.000	3.705***	0.000
Difference in Median	0.160	0.153	0.127	0.848	-0.068***	0.000
3-Year Middle Grade						
Difference in Mean	0.784	0.110	7.704***	0.000	0.409	0.394
Difference in Median	0.129**	0.043	-0.057***	0.000	-0.090***	0.000
3-Year Bottom Grade						
Difference in Mean	4.977***	0.001	20.224***	0.000	2.768**	0.028
Difference in Median	0.144*	0.089	-0.140*	0.059	-0.094***	0.000
5-Year Top Grade						
Difference in Mean	13.205***	0.005	14.727***	0.003	0.845	0.682
Difference in Median	0.303**	0.047	0.106	0.898	-0.09***	0.000
5-Year Middle Grade						
Difference in Mean	2.955***	0.000	13.142***	0.000	2.708***	0.002
Difference in Median	0.145	0.758	0.145	0.875	-0.076***	0.000
5-Year Bottom Grade						
Difference in Mean	10.660***	0.000	18.447***	0.000	3.674*	0.078
Difference in Median	0.161	0.166	-0.174***	0.000	-0.125***	0.000

Table 3. Funding Time - Multi-variate Analysis

This table presents the results of multi-variate analysis on loan's funding time. *Pre Week* takes a value of one for the pre-event window from 09/22/2016 – 09/28/2016. *Post Week 1* takes a value of one for the post-event window from 10/28/2016 – 11/03/2016. *Post Week 2* takes a value of one for the post-event window from 11/04/2016 – 11/10/2016. *Post Week 3* takes a value of one for the post-event window from 11/11/2016 – 11/17/2016. *Funding Time* is the duration between the loan's start and end funding time, measured in hours. For Prosper's loans, *Top Grade* equals one if the loan belongs to grade AA or A and zero otherwise; *Middle Grade* equals one if the loan belongs to grade B or C and zero otherwise; *Bottom Grade* equals one if the loan belongs to grade D, E or HR and zero otherwise. For Lending Club's loans, *Top Grade* equals one if the loan belongs to grade A or B and zero otherwise. *Middle Grade* equals one if the loan belongs to grade C, D or E and zero otherwise. *Bottom Grade* equals one if the loan belongs to grade F or G and zero otherwise. 3-Year means the loan is a 3-year loan and 5-Year means the loan is a 5-year loan. The regression includes a set of control variables: loan characteristics, borrower characteristics, and market-related controls. Loan characteristics include the following variables: *Listing Amount* is the dollar amount of a loan, quoted in \$1,000. *Borrower Rate* is the interest rate of the loan. *Listing Term* is the term of the loan. Borrower characteristics include *Income Range*, which is a category variable ranging from 2 to 6, while a greater value represents a higher income range. Market-related controls include the following variables: *Stock Market Return* is measured using the average of daily market returns over the five trading days prior to a loan's start funding date. *Stock Market Volatility* is measured using the standard deviation of daily market returns over the five trading days prior to a loan's start funding date. *Credit Spread* is measured as the spread between the 5-year High Quality Market (HQM) corporate bond yield and the 5-year treasury yield for the top- and middle-grade loans, and it is measured as the spread between the 5-year high-yield CCC or below bond yield and the 5-year treasury yield for the bottom-grade loans. For the regression with *Funding Time* as the dependent variable, we also include *Funding Time Volatility*, which is measured as the standard deviation of funding time for all loans listed in the week prior to a loan's start funding date. Statistical significance at the 10%, 5% and 1% levels is denoted by *, ** and ***, respectively. t-statistics are in parentheses.

(Table 3 continued)

	Prosper Individual Lender Funding Time	Prosper Individual Lender Funding Time	Lend Club Individual Lender Funding Time	Lend Club Individual Lender Funding Time	Prosper Institu. Lender Funding Time	Prosper Institu. Lender Funding Time
3-Year Top Grade \times Post Week 1	-37.910*** (-4.251)	-42.950*** (-4.823)	-8.209*** (-3.843)	4.508* (1.941)	7.145*** (6.531)	8.513*** (6.604)
3-Year Top Grade \times Post Week 2	-10.100 (-0.928)	-16.710 (-1.363)	14.480*** (6.371)	20.210*** (5.229)	11.070*** (8.391)	4.666*** (2.660)
3-Year Top Grade \times Post Week 3	19.290** (1.996)	20.580** (2.306)	9.747*** (4.383)	16.040*** (7.010)	3.704*** (4.022)	5.213*** (5.186)
3-Year Middle Grade \times Post Week 1	49.220*** (5.554)	43.780*** (4.726)	-20.260*** (-9.434)	-7.906*** (-3.345)	0.943 (1.032)	2.568** (2.250)
3-Year Middle Grade \times Post Week 2	67.500*** (6.478)	58.010*** (4.724)	-18.080*** (-8.260)	-13.950*** (-3.655)	7.863*** (7.546)	1.945 (1.245)
3-Year Middle Grade \times Post Week 3	54.030*** (5.379)	44.410*** (4.693)	-22.430*** (-10.860)	-18.900*** (-8.832)	0.568 (0.683)	1.806* (1.954)
3-Year Bottom Grade \times Post Week 1	33.170*** (3.801)	53.270*** (2.651)	49.570*** (4.052)	80.850*** (5.986)	4.461*** (2.881)	28.670*** (9.181)
3-Year Bottom Grade \times Post Week 2	29.130*** (3.110)	45.500*** (4.073)	48.430*** (3.130)	74.920*** (5.202)	19.710*** (10.380)	29.910*** (13.520)
3-Year Bottom Grade \times Post Week 3	29.170*** (3.080)	48.800*** (4.479)	48.400* (1.770)	66.220*** (2.615)	2.251* (1.762)	15.340*** (8.675)
5-Year Top Grade \times Post Week 1	-32.910 (-1.639)	-59.360*** (-3.307)	-92.260** (-1.974)	-78.850* (-1.830)	13.220*** (5.055)	14.400*** (5.388)
5-Year Top Grade \times Post Week 2	9.540 (0.441)	-12.950 (-0.641)	1.913 (0.099)	3.735 (0.207)	14.740*** (4.197)	8.397** (2.294)
5-Year Top Grade \times Post Week 3	19.600 (1.017)	16.300 (0.957)	32.740** (1.961)	32.160** (2.078)	0.860 (0.516)	2.708 (1.593)
5-Year Middle Grade \times Post Week 1	79.170*** (6.775)	86.860*** (7.805)	-109.100*** (-15.680)	-64.380*** (-9.583)	2.644** (2.048)	4.616*** (3.191)
5-Year Middle Grade \times Post Week 2	87.830*** (5.484)	78.230*** (4.868)	-108.500*** (-14.560)	-69.350*** (-8.928)	12.830*** (8.459)	6.887*** (3.634)
5-Year Middle Grade \times Post Week 3	36.680*** (2.872)	34.430*** (3.009)	-107.800*** (-16.290)	-70.670*** (-11.240)	2.397** (2.151)	4.189*** (3.554)
5-Year Bottom Grade \times Post Week 1	83.810*** (7.719)	94.340*** (4.512)	-18.530 (-1.494)	11.730 (0.858)	11.550*** (6.363)	35.930*** (11.040)
5-Year Bottom Grade \times Post Week 2	78.130*** (6.265)	71.790*** (5.568)	-23.830* (-1.751)	-6.117 (-0.481)	19.340*** (8.856)	29.130*** (11.940)
5-Year Bottom Grade \times Post Week 3	115.100*** (9.880)	110.800*** (8.961)	-26.300** (-2.524)	-4.911 (-0.491)	4.568*** (2.881)	17.150*** (8.632)
Controls	No	Yes	No	Yes	No	Yes
Borrower State FEs	No	Yes	No	Yes	No	Yes
Observations	1,952	1,952	8,335	8,189	12,295	12,295
R-squared	0.330	0.515	0.192	0.322	0.042	0.075

Table 4. Origination Fee - Univariate Analysis

This table presents the results of univariate analysis on Prosper loan's origination fee. *Pre Week* takes a value of one for the pre-event window from 09/22/2016 – 09/28/2016. *Post Week 1* takes a value of one for the post-event window from 10/28/2016 – 11/03/2016. *Post Week 2* takes a value of one for the post-event window from 11/04/2016 – 11/10/2016. *Post Week 3* takes a value of one for the post-event window from 11/11/2016 – 11/17/2016. *Origination Fee* is a measure for the loan's origination fee, quoted in basis points. For Prosper's loans, *Top Grade* equals one if the loan belongs to grade AA or A and zero otherwise; *Middle Grade* equals one if the loan belongs to grade B or C and zero otherwise; *Bottom Grade* equals one if the loan belongs to grade D, E or HR and zero otherwise. For Lending Club's loans, *Top Grade* equals one if the loan belongs to grade A or B and zero otherwise. *Middle Grade* equals one if the loan belongs to grade C, D or E and zero otherwise. *Bottom Grade* equals one if the loan belongs to grade F or G and zero otherwise. *3-Year* means the loan is a 3-year loan and *5-Year* means the loan is a 5-year loan. Statistical significance at the 10%, 5% and 1% levels is denoted by *, ** and ***, respectively.

(Table 4 continued)

	Post Week 1 - Pre Week	p- value	Post Week 2 - Pre Week	p- value	Post Week 3 - Pre Week	p- value
Panel A: Prosper Individual Lenders						
Full Sample						
Difference in Mean	9.519*	0.054	21.037***	0.000	5.030	0.352
Difference in Median	0.899	0.106	3.500***	0.000	-0.700	0.448
3-Year Top Grade						
Difference in Mean	-2.910	0.793	16.157	0.224	-2.140	0.861
Difference in Median	-0.799***	0.001	-0.149*	0.075	-0.250***	0.005
3-Year Middle Grade						
Difference in Mean	-1.331*	0.091	-2.228**	0.014	-1.211	0.181
Difference in Median	-0.899*	0.054	-2***	0.004	-1*	0.077
3-Year Bottom Grade						
Difference in Mean	3.166**	0.012	3.611***	0.007	4.348***	0.001
Difference in Median	7.700***	0.000	9.299***	0.000	10***	0.000
5-Year Top Grade						
Difference in Mean	-21.118	0.232	-6.082	0.731	7.461	0.619
Difference in Median	-93.800**	0.047	-3**	0.046	-3	0.109
5-Year Middle Grade						
Difference in Mean	-1.607	0.188	-4.278***	0.010	-3.369***	0.008
Difference in Median	-4	0.195	-10***	0.008	-7***	0.006
5-Year Bottom Grade						
Difference in Mean	3.695**	0.014	3.767**	0.021	1.404	0.308
Difference in Median	2.649**	0.019	2.549**	0.032	2.500	0.215

(Table 4 continued)

	Post Week 1 - Pre Week	p- value	Post Week 2 - Pre Week	p- value	Post Week 3 - Pre Week	p- value
Panel B: Prosper Institutional Lenders						
Full Sample						
Difference in Mean	1.773	0.361	1.917	0.392	-8.436***	0.000
Difference in Median	-0.599	0.583	0	0.667	-2.299***	0.000
3-Year Top Grade						
Difference in Mean	0.895	0.840	1.934	0.714	-22.643***	0.000
Difference in Median	-1.200***	0.000	-1.100***	0.000	-2***	0.000
3-Year Middle Grade						
Difference in Mean	-0.282	0.318	-0.701**	0.024	-0.901***	0.000
Difference in Median	0.2999	0.223	0**	0.036	-1***	0.000
3-Year Bottom Grade						
Difference in Mean	-0.234	0.758	-2.157**	0.011	2.683***	0.000
Difference in Median	-1.799	0.880	-1.899*	0.064	3.100***	0.000
5-Year Top Grade						
Difference in Mean	-5.206	0.397	-16.205**	0.040	-2.736	0.577
Difference in Median	-2.300***	0.000	-3.100***	0.000	-2.100***	0.000
5-Year Middle Grade						
Difference in Mean	-0.896**	0.039	-1.341***	0.008	-2.599***	0.000
Difference in Median	-1.149**	0.049	-2.449**	0.015	-5.149***	0.000
5-Year Bottom Grade						
Difference in Mean	1.597*	0.061	-0.279	0.753	2.043***	0.010
Difference in Median	0.500**	0.044	0.500	0.974	2.500**	0.012

Table 5. Origination Fee - Multi-variate Analysis

This table presents the results of multi-variate analysis on loan's origination fee. *Pre Week* takes a value of one for the pre-event window from 09/22/2016 – 09/28/2016. *Post Week 1* takes a value of one for the post-event window from 10/28/2016 – 11/03/2016. *Post Week 2* takes a value of one for the post-event window from 11/04/2016 – 11/10/2016. *Post Week 3* takes a value of one for the post-event window from 11/11/2016 – 11/17/2016. *Origination Fee* is a measure for the loan's origination fee, quoted in basis points. For Prosper's loans, *Top Grade* equals one if the loan belongs to grade AA or A and zero otherwise; *Middle Grade* equals one if the loan belongs to grade B or C and zero otherwise; *Bottom Grade* equals one if the loan belongs to grade D, E or HR and zero otherwise. For Lending Club's loans, *Top Grade* equals one if the loan belongs to grade A or B and zero otherwise. *Middle Grade* equals one if the loan belongs to grade C, D or E and zero otherwise. *Bottom Grade* equals one if the loan belongs to grade F or G and zero otherwise. 3-Year means the loan is a 3-year loan and 5-Year means the loan is a 5-year loan. The regression includes a set of control variables: loan characteristics, borrower characteristics, and market-related controls. Loan characteristics include the following variables: *Listing Amount* is the dollar amount of a loan, quoted in \$1,000. *Borrower Rate* is the interest rate of the loan. *Listing Term* is the term of the loan. Borrower characteristics include *Income Range*, which is a category variable ranging from 2 to 6, while a greater value represents a higher income range. Market-related controls include the following variables: *Stock Market Return* is measured using the average of daily market returns over the five trading days prior to a loan's start funding date. *Stock Market Volatility* is measured using the standard deviation of daily market returns over the five trading days prior to a loan's start funding date. *Credit Spread* is measured as the spread between the 5-year High Quality Market (HQM) corporate bond yield and the 5-year treasury yield for the top- and middle-grade loans, and it is measured as the spread between the 5-year high-yield CCC or below bond yield and the 5-year treasury yield for the bottom-grade loans. For the regression with *Funding Time* as the dependent variable, we also include *Funding Time Volatility*, which is measured as the standard deviation of funding time for all loans listed in the week prior to a loan's start funding date. Statistical significance at the 10%, 5% and 1% levels is denoted by *, ** and ***, respectively. t-statistics are in parentheses.

(Table 5 continued)

	Prosper Individual Lender Origina. Fee	Prosper Individual Lender Origina. Fee	Prosper Institu. Lender Origina. Fee	Prosper Institu. Lender Origina. Fee
3-Year Top Grade × Post Week 1	-7.686 (-1.441)	1.701 (0.296)	-1.636 (-0.675)	4.622* (1.733)
3-Year Top Grade × Post Week 2	11.380* (1.747)	21.410*** (2.680)	-0.597 (-0.204)	2.145 (0.582)
3-Year Top Grade × Post Week 3	-6.916 (-1.196)	0.029 (0.005)	-25.170*** (-12.340)	-18.580*** (-8.800)
3-Year Middle Grade × Post Week 1	-0.812 (-0.153)	12.730** (2.145)	0.777 (0.384)	6.236*** (2.647)
3-Year Middle Grade × Post Week 2	-1.709 (-0.274)	13.280* (1.661)	0.358 (0.155)	3.360 (1.023)
3-Year Middle Grade × Post Week 3	-0.692 (-0.115)	9.244 (1.517)	0.159 (0.086)	5.430*** (2.796)
3-Year Bottom Grade × Post Week 1	7.843 (1.503)	-2.078 (-0.161)	2.711 (0.791)	8.784 (1.339)
3-Year Bottom Grade × Post Week 2	8.289 (1.479)	-1.588 (-0.228)	0.788 (0.187)	6.293 (1.361)
3-Year Bottom Grade × Post Week 3	9.025 (1.593)	-4.970 (-0.706)	5.628** (1.989)	-0.283 (-0.076)
5-Year Top Grade × Post Week 1	11.940 (0.994)	12.970 (1.111)	25.300*** (4.368)	31.400*** (5.605)
5-Year Top Grade × Post Week 2	26.980** (2.085)	28.750** (2.185)	14.300* (1.838)	18.860** (2.452)
5-Year Top Grade × Post Week 3	40.520*** (3.516)	39.060*** (3.524)	27.770*** (7.527)	31.940*** (8.942)
5-Year Middle Grade × Post Week 1	-2.474 (-0.354)	-0.897 (-0.124)	-2.980 (-1.042)	0.618 (0.205)
5-Year Middle Grade × Post Week 2	-5.144 (-0.537)	3.217 (0.307)	-3.425 (-1.019)	-2.591 (-0.651)
5-Year Middle Grade × Post Week 3	-4.235 (-0.554)	-0.572 (-0.076)	-4.683* (-1.897)	1.376 (0.556)
5-Year Bottom Grade × Post Week 1	-2.466 (-0.380)	-0.182 (-0.013)	-3.493 (-0.869)	10.820 (1.582)
5-Year Bottom Grade × Post Week 2	-2.394 (-0.321)	0.057 (0.007)	-5.370 (-1.110)	7.661 (1.504)
5-Year Bottom Grade × Post Week 3	-4.757 (-0.683)	-0.175 (-0.022)	-3.047 (-0.868)	5.243 (1.262)
Controls	No	Yes	No	Yes
Borrower State FEs	No	Yes	No	Yes
Observations	1,952	1,952	12,295	12,295
R-squared	0.696	0.739	0.628	0.676

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